

Translation

PATENT COOPERATION TREATY

PCT/JP2002/010906



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

Rec'd PCT/PTO 28 FEB 2005

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference OGW02P190A	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP2002/010906	International filing date (day/month/year) 22 October 2002 (22.10.2002)	Priority date (day/month/year) 28 August 2002 (28.08.2002)
International Patent Classification (IPC) or national classification and IPC B21D 51/16, 19/04, 41/02, B23P 23/02		
Applicant OGAWA, Kiyoshi		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 25 September 2003 (25.09.2003)	Date of completion of this report 17 June 2004 (17.06.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2002/010906

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages _____ 1-3, 5, 7-18 _____, as originally filed
pages _____, filed with the demand
pages _____ 4, 6 _____, filed with the letter of _____ 18 February 2004 (18.02.2004)
- ☒ the claims:
pages _____ 1-13 _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the drawings:
pages _____ 1/13-13/13 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP02/10906

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

J. Statement

Novelty (N)	Claims	1-13	YES
	Claims		NO
Inventive step (IS)	Claims	1-13	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO

2. Citations and explanations

Document 1: JP, 2002-35849, A (Kiyoshi Ogawa), 5 February, 2002 (05.02.02), full text, all drawings
 Document 2: JP, 4-28422, A (Kaiyo Giken K.K.), 31 January, 1992 (31.01.92), full text, all drawings
 Document 3: JP, 3-90220, A (K.K. Arumasu), 16 April, 1991 (16.04.91), full text, all drawings
 Document 4: JP, 10-146623, A (CK Metals Inc.), 2 June, 1998 (02.06.98), full text, all drawings
 Document 5: JP, 58-77719, A (Benkan Plant K.K.), 11 May, 1983 (11.05.83), full text, all drawings

The subject matters of claims 1-8 appear to be novel and to involve an inventive step in view of documents 1-5 cited in the ISR. A feature wherein a sub-shaft is provided about the same axis of a spindle, and a feature wherein a mounting base where a machining head can be installed in a manner that it is movable in the radial direction is provided on the sub-shaft, both described in claim 1, are neither described nor suggested in documents 1-5.

The subject matters of claims 9-13 appear to be novel and to involve an inventive step in view of documents 1-5 cited in the ISR. The subject matters of claims 9-13 are neither described nor suggested in documents 1-5.

Since the machining tools can be mounted as attachments on the flange of the main shaft and the mount base of the auxiliary shaft, the flaring process, the flared surface grinding process, the stainless tube flexure preventing process, the welding groove forming process, and the process for removing lining can be performed on the steel tube by the single combined machining equipment. The combined machining equipment can select a combination of machining tools for a desired application.

The machining head on the mount base is radially movable and can be fixed in position. Therefore, steel tubes having a wide range of diameters can be machined by the single equipment.

In case of the flaring process, a flexure prevention machine head can be installed on the flange along with the second machining head, thereby a thin-walled steel tube such as a stainless steel tube can be machined.

The common mount has a front frame to which the steel tube holding apparatus is fixed, and a back frame for pressing a slide frame which holds the main shaft thereon. The front frame and the back frame are firmly fixed to each other by four side frames and two base frames. The main shaft and the auxiliary shaft are rotatably assembled in the slide frame. The steel tube is pressed and deformed in the common mount that is shaped as a strong box. The combined machining equipment is simplified in structure and operation, and is small in size and weight for transportation to piping construction sites.

If a attachment for removing the lining is installed, then the lining on a lined steel tube that is mass-produced to predetermined dimensions can be peeled off, and the steel tube can be flared to dimensions on site. Then, a rust-resistant covering collar with an O-ring is set on the flared surface of the steel tube. Thus, a lined steel tube can be machined and laid as a pipe on site.

mounted thereon, for sliding movement in directions perpendicular to the central axis of main shaft 121. Auxiliary shaft 131 is fitted in an inner bore of main shaft 121 and an inner surface of flange 122. Auxiliary shaft 131 is slidable along the central axis of main shaft 121, but is fixed against rotation with respect to main shaft 121. Cotter 138 is held by a diametrical through hole defined in auxiliary shaft 131 and extends through a groove that is defined in main shaft 121 and extends axially thereof. Cotter 138 is fixed to cotter slide unit 137 slidably mounted on main shaft 121. Cotter slide unit 137 is slidably rotatable and held in engagement with nonrotatable pressure frame 136. Third hydraulic cylinders 139 have respective ends fixed to slide frame 141 and also have respective piston rods secured to pressure frame 136. When third hydraulic cylinders 139 are actuated, auxiliary shaft 131 slides back and forth with respect to main shaft 121 that is fixed to slide frame 141 against back-and-forth movement. Auxiliary shaft 131 is fixed against rotation with respect to main shaft 121 by mount base 131 fitted in flange 122 and cotter 138. When auxiliary shaft 131 moves axially with respect to main shaft 121, the relative positions of first machining heads 134 and second machining heads 124 change in the axial direction of main shaft 121.

As shown in FIG. 3, slide frame 141 has front slide frame 142, back slide frame 143, and tie rods 144 connecting these frames to each other. Main shaft 121 is rotatably supported by first main bearing 147 mounted in front slide frame 142 and second main bearing 148 mounted on back slide frame 143. The ends of third hydraulic cylinders 139 for moving auxiliary shaft 131 slidably with respect to main shaft 121 and a frame of drive motor 129 are fixed to back slide frame 143. The drive shaft of drive motor 129 is fixedly mounted in an axial hole defined in the rear end of main shaft 121. Sliders 145 are mounted on both sides of frames 142, 143 and held in engagement with guide rails 146 disposed